

and needy, before we encourage the emigration of our fellow countrymen, that they should not have to run from one distress to another, but that they should be cared for when they arrive in distant colonies and find ample compensation for leaving a distant home, by the pre-induced and prepared happy employment and reward of toil which they seek, and thereby have occasion to feel single cause ever to have and grow upon an affectionate and grateful remembrance of those of the nation they have left.

Plans for emigration promoted and instigated and provided for as described, would be indeed a blessing to our country; it would afford a means of permanent employment and improved condition; but until we shall have commenced with and established the right concern and care for our poor, the working classes at home, emigration will only be an unmanageable trouble to us, increasing our distresses for the time present, and a curse to us as a nation, increasing our perplexities with the time to come.

Agriculture, arts, manufactures, and trade at home are the first essentials and the only sources of legitimate wealth, of employment and consequent relief to the distresses of the poor, the working classes. Commerce with other nations is only an adjunctive means which gives the value of steady increase to this employment, when and as the honest and solid worth of the home industry shall have been duly cared for. If it be so cared for,—flourishing as a populous kingdom, we can then afford to buy, freely the industrial products of other nations, and extend our own happy but not aversive wealth, by interchange of products of our industry, creating with other nations the due appreciation and fruitful and sterling value of our own.

The community may abuse or evil their power to do the good that is needful by the mere will to do it, and thus tolerate and perpetuate evil, enjoying their will to do good, alike in its preception and deception.

There is a power for the community lodged in the governing institutions of our country, to foster, to create anew when decayed, and to cherish the vigorous energies of our home trade and manufactures.

A parent of a family would check all injurious or licentious freedom in one child, which was either hurtful to such child or tending to injure or destroy the welfare of any of his other children. So will the parental power of the state guard and protect the proper and wholesome freedom of all individuals and classes; for whose welfare and guardianship it is appointed to protect, so that the freedom given to one individual or class of individuals should not be exercised to the injury of any one member or body of members of the community.

Arts and manufactures, trade and commerce, are inseparably connected with freedom; but it is only a just and wholesome freedom based upon just laws of mutual benevolence, based upon those "eternal principles of justice which unite the wise, the learned, and the good of every name and denomination, and insure the final triumph of whatever is consistent in goodness with these principles." It is only with this wholesome freedom that a country flourishes in blessings of itself and the means of blessing other nations; but with unrestrained harmful liberty, it soon falls to decay. The very rivalry of injurious competition engenders animosities and injuries from one portion of a trading interest against the other of its own class—but to such a pitch has it now run, that the manufacturing interest is not content with rivaling prejudicially the manufacturing interest, but sets itself against whatever interest shall interfere with its money-gains, even against its best friends, the agriculturists, setting with this interest, one against the other, with a reckless spirit of general ruin.

Artists, manufacturers, and merchants duly encouraged are the life and soul of a commercial and enterprising—a happily civilized country. It is on these the agriculture of all nations, but especially the agriculture of our own nation, depends. In vain will the farmer raise his corn, or fatten his cattle, if there be not manufacturers willing to buy, and the many

sufficient to consume the product of their industry and labour.

But if our merchants be encouraged by the government of the country, merely to suit the supposed money advantages of the manufacturers, to procure, as in substitution for that which the agriculturists of our country have produced, the corn and cattle from abroad, then is the freedom given to arts, manufactures, trade, and commerce made tyrannical—then assuredly will our country sink to decay.

Under the mutually advantageous desires of a people, and the genial desires and encouragement of a duly founded free country—agriculture is carried to the highest pitch, farmers are wealthy, peasants abound and have abundant work; all are employed, and all are happy. The farmer finds a ready market for all his cattle, corn, and wool, and the peasant goes cheerfully to his labours in the field, while his wife and children sing (perhaps it may be again as it was in former days) over the spinning-wheel. "The pastures are clothed with flocks, the valleys all are covered with corn, and the little hills rejoice on every side."

In this state of things, the wealthy and happy manufacturer, manufacturing in one of the districts of this should-be happy island would be amongst the first, with merry bells of joyous hearts (thus set at ease and made content), to rejoice at the welfare of others; but, most assuredly, by their striving to effect the realization of this attainable welfare of the agriculturists, will they accomplish their own happy and lasting employment, and their own enduring and lastingly substantial welfare, with happy hours of rest for enjoying the fruits of their labour, either in the town or the suburban country, when their daily labour is done.

As the farmer depends upon the manufacturer for consuming the product of his labour and industry, so does the manufacturer depend upon the agriculturist to consume or purchase for fancy or for use whatever may be produced by the industrious enterprise of manufacture.—All beyond the support at home (such as the home consumption) should only be looked upon as secondary and for certainty of dependence; and the secondary and adventitious speculation, subject to all the chances of adventitious causes, which produce a casual demand that can never be reckoned upon as certain, or of sure continuance; whereas, to a certain extent, if agriculture at home be duly encouraged and flourishing, the manufacturer always reckons upon a certain amount of demand for his product, and increasing annually, as confidence and mutual prosperity shall exist and increase amongst mankind.—*Provident Philanthropist.*

DESCRIPTION OF MR. CROGGON'S PATENT ASPHALTE ROOFING.

THIS material for roofing is a composition of hair and hemp, felted together and thoroughly saturated with pure mineral asphalt; it is a perfect non-conductor of heat and cold, and consequently keeps buildings both warm and cool. It is portable, for being flexible, it is easily packed, and it is not liable to damage. It is so light, that timbers little stronger than sufficient to carry themselves will support it; nor is it applicable only to the roofs, but also to the sides and the eaves of the building. The following application.—Cover the roof or building with thin (say $\frac{1}{4}$ inch) close boarding, where practicable, not running horizontally, but the reverse way; securely nail the "material," such sheet lapping about $\frac{1}{2}$ inch, with copper nails; then pay it over, while hot, with a mixture of coal-tar and lime (about $\frac{1}{2}$ lb. of the latter to 2 gallons of the former). When this has become hard, it is advisable to give it a second coat, and the roof is complete. The price of the material is one penny per foot superficial; it is in all cases 32 inches wide, but can be furnished of any length. As a protective material to plants Dr. Lindley has pronounced it most efficient.

The "Dry Hair Felt" is a very desirable material to prevent the escape of heat from boilers and steam pipes, where heat has to be conveyed from one part of premises to another. As a preventive to sound it is most effectual barrier, by lining the partitioned of rooms with it.—*From a Correspondent.*

MICROSCOPICAL SOCIETY.

JAN. 17.—J. S. Bowerbank, Esq., F.R.S., in the chair.—The secretary, Mr. John Quekett, made some observations upon the structure of some human bones which had been found in a box about ten feet below the surface. When first taken up they were as black as ebony, but on drying, the colour had changed to a dark brown; the specific gravity was exactly twice that of water. The most remarkable circumstance connected with these bones, was the fact, that if the earthenware vessel, which had been penetrated into the Haversian canal, but had made its way from them through the canaliculi into the osseous corpuscles. The specimens exhibited had been boiled in Canada balsam, to render them very transparent, and to show the great contrast between the corpuscles which had been filled with earthy matter, and those which were still empty. The same fact had been noticed by Mr. Ince in the bones of mummy. The author stated that he had not been able to succeed in filling the corpuscles with injection.

Mr. Dalrymple alluded to a portion of a skull of a Peruvian, in the Haversian canals of which he had seen not only a single vessel running to the canal, but a number of capillaries on the walls of the canal. Dr. Goodfellow mentioned that he had seen the osseous corpuscles artificially filled by Mr. Tomes.

Mr. Quekett then made another communication on the arrangement of the blood-vessels in the lower part of the lung of the camelion, which were so precisely like those in the air-bladder of the eel, that it left no doubt on his mind of the respiratory function of that organ.

ROYAL INSTITUTION.

JAN. 19.—On Friday evening, Mr. Brande gave a very instructive lecture "On Fermentation." The lecturer, after some successful experiments, shewing the changes produced by chemical action, directed particular attention to the fact, that the presence of a body which could have no visible apparent action, is yet found to exercise most decided influence. A portion of chlorate of potash was heated by an argand lamp in a glass retort, and by the side of it was placed, in a retort of exactly the same size, exposed to exactly the same heat, some chlorate of potash mixed with a small portion of oxide of manganese; after a few minutes, the chloride of potash mixed with the oxide of manganese was observed to be suffering decomposition, evolving large quantities of oxygen gas, while the other suffered no change. The oxide of manganese was entirely unchanged, and even oxide of copper, or any metallic oxide, could be substituted for it. Again, platinum rendered pyroelectric acid; it could be heated in it without change. Silver was, on the contrary, dissolved. Yet, on submitting an alloy of these two metals to the action of the acid, the platinum might be supposed still to escape action, but it was not so. The chemical action commenced in the silver, extended to the platinum; both were dissolved, and the solution was saturated with ferrous salts, the action of neither was at the present moment known, and the application of abstract chemical terms did not advance the knowledge. Experiments had, however, proved that no body, unless it contained nitrogen in its composition, could produce this result. On mixing a quantity of sulphuric acid with a solution of sugar and water, the following changes could be traced:—sugar consisted of three atoms of carbon, three of hydrogen, three of oxygen; a proportion of carbon would, under the influence of the yeast, unite with oxygen, forming carbonic acid, and the remaining proportion would be set free, and escape in the form of gas. In the manufacture of wine, yeast was not required, as the sugar of the grape contained this principle, yet the grapes could be dried into raisins without change; but that arose from the total imperviousness of the skin of the grape to air. Drying could be effected, for water could pass, but no air; allow even for a moment, and the raisins and the change into various fermentation would inevitably result. There was a peculiarly instructive experiment of Liebig upon this point: he introduced into a vessel holding a solution of sugar and water, a smaller one with a false bottom (covered with yeast), and placed in the smaller one some yeast;